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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/643,015

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Todd S. Emrick

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06/25/2008

REINHART BOERNER VAN DEUREN S.C.
ATTN: LINDA KASULKE, DOCKET COORDINATOR
1000 NORTH WATER STREET
SUITE 2100
MILWAUKEE, WI 53202

EXAMINER

FEELY, MICHAEL J

ART UNIT

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1796

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DELIVERY MODE

06/25/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/643,015	Applicant(s) EMRICK ET AL.	
	Examiner Michael J. Feely	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-19 is/are allowed.
- 6) ☒ Claim(s) 1-3,6-9,11,12,20 and 21 is/are rejected.
- 7) ☒ Claim(s) 4,5,10,13,22-24 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Pending Claims

Claims 1-24 and 26 are pending.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 10, 2008 has been entered.

Declarations Under 37 CFR 1.131

2. The declarations filed on June 10, 2007 under 37 CFR 1.131 are sufficient to overcome the Dubertret et al. (Pub. No.: US 2004/0033345) reference.

Response to Amendment

3. The objection to claim 26 has been overcome by amendment.
4. The rejection of claims 1-5, 14, 15, and 18 under 35 U.S.C. 102(e) as being anticipated by Dubertret et al. (Pub. No.: US 2004/0033345) *has been overcome by the declarations filed under 37 CFR 1.131.*

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Previously Indicated Allowable Subject Matter

5. The indicated allowability of claims 6-10 is withdrawn in view of the newly discovered reference(s) to Kambe et al. (US 2002/0192476) and Baglin et al. (US 2003/0035887).

Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 11 and 12 are rejected under 35 U.S.C. 102(a) as being anticipated by Billancia et al. (entry A7 on the IDS dated 02/07/2005).

Regarding claims 11 and 12, Billancia et al. disclose: **(I1)** a polymeric compound comprising a pyridine ligand substituted with a poly(ethylene glycol) component comprising at least 2 ethylene glycol monomers, said poly(ethylene glycol) component coupled to said pyridine ligand with one of an *ether* and an amine linkage, and said terminus comprising a functional group moiety selected from hydroxyl, alkyl, *alkoxy*, carboxylate, thymine, ammonium salt and substituted ammonium salt moieties (column 1; Figure 1); and **(I2)** wherein the PEG comprises up to about 100 ethylene glycol monomers (column 1; Figure 1).

Note: the claim does not explicitly call for a *single* pyridine moiety at the *terminal* of the polymeric compound. Furthermore, the claim does not explicitly call for *direct coupling* of the pyridine ligand to the poly(ethylene glycol). Hence, the claim is satisfied by: the *ter*-pyridine ligand *directly* coupled to the PEG; or a *terminal* pyridine ligand (part of the *ter*-pyridine) *indirectly* coupled to the PEG.

8. Claims 1-3 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Kambe et al. (US 2002/0192476).

Regarding claims 1-3, Kambe et al. disclose: **(I)** a composite (paragraphs 0080-0082) comprising a metallic nanoparticulate substrate component (paragraph 0119) and a polymeric ligand component (paragraphs 0080-0082), said ligand component comprising a nitrogenous coupling moiety coupling said ligand component and said substrate component (paragraph 0110); **(2)** wherein said substrate comprises a nanoparticle selected from CdSe, CdS, CdTe, ZnS,

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ZnSe, Co and combinations thereof (paragraph 0114); and **(3)** wherein said nitrogenous moiety is selected from amino, pyridinyl and aminopyridinyl moieties (paragraphs 0010 & 0114);

Regarding claim 20, Kambe et al. disclose: **(20)** a method of using ligand solubility to disperse a nanoparticulate substrate, said method comprising: providing a composite comprising a nanoparticulate substrate and a first ligand component (paragraph 0075); and contacting said composite with a second ligand component (paragraph 0076), said second ligand component in a liquid medium (paragraph 0076), said second ligand component comprising a nitrogenous coupling moiety and at least partially soluble in said medium (paragraphs 0076 & 0110), said contact with said second ligand component displacing said first ligand component and dispersing said nanoparticulate substrate in said medium (paragraphs 0075-0076).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billancia et al. in view of Baglin et al. (US 2003/0035887).

Regarding claims 6-9, Billancia et al. disclose: **(6)** an emissive nanoparticle composite comprising a nanoparticle and an ethylene glycol ligand component, said component comprising a nitrogenous coupling terminus selected from pyridinyl and aminopyridinyl moieties (column 1; Figure 1), said nitrogenous coupling terminus coupling said ligand component and said

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nanoparticle (column 1; Figure 1); **(7)** wherein said ligand component comprises poly(ethylene glycol) having a molecular weight of about 200 to about 5,000 (column 1, Figure 1); **(8)** wherein said ligand component comprises about 2 to about 20 ethylene glycol monomers (column 1; Figure 1); and **(9)** wherein said ethylene glycol component has a terminus comprising a functional group moiety selected from hydroxy, alkyl, alkoxy, carboxylate, thymine, ammonium salt and substituted ammonium salt moieties (column 1; Figure 1).

Billancia et al. disclose the use of Pd or CdS nanoparticles; hence, they fail to explicitly disclose: **(6)** an emissive nanoparticle composite comprising a CdSe nanoparticle.

Baglin et al. also disclose the functionalization of nanoparticles (*see Abstract*), wherein CdSe and CdS are used interchangeably (*see paragraph 0020*). This teaching demonstrates that both CdSe and CdS are recognized in the art as suitable metal-based nanoparticles used for functionalization. In light of this, it has been found that the selection of known material based on its suitability for its intended use supports a *prima facie* obviousness determination – *see MPEP 2144.07*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use CdSe nanoparticles in the composite particle of Billancia et al. because the teachings of Baglin et al. demonstrate that both CdSe and CdS are recognized in the art as suitable metal-based nanoparticles used for functionalization.

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kambe et al. (US 2002/0192476) in view of Baglin et al. (US 2003/0035887).

Regarding claim 21, the teachings of Kambe et al. are as set forth above and incorporated herein. They disclose the use of metal, metalloid, and metal/metalloid sulfide (*see paragraph 0073*); however, they fail to explicitly disclose: **(21)** wherein said substrate comprises a nanoparticle selected from CdSe, CdS, CdTe, ZnS, ZnSe, Co and combinations thereof.

Baglin et al. also disclose the functionalization of nanoparticles (*see Abstract*), wherein CdS is used as a representative metal salt. They also disclose that CdSe and CdS are used interchangeably (*see paragraph 0020*). This teaching demonstrates that both CdS and CdSe are recognized in the art as suitable metal-based nanoparticles used for functionalization. In light of this, it has been found that the selection of known material based on its suitability for its intended use supports a *prima facie* obviousness determination – *see MPEP 2144.07*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use CdS or CdSe nanoparticles in the composite particle of Kambe et al. because the teachings of Baglin et al. demonstrate that both CdS and CdSe are recognized in the art as suitable metal-based nanoparticles used for functionalization.

Allowable Subject Matter

12. Claims 14-19 are allowed.

13. Claims 4, 5, 10, 13, 22-24, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is (571)272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Y. Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J Feely/
Primary Examiner, Art Unit 1796

June 21, 2008